

# **Practical:3**

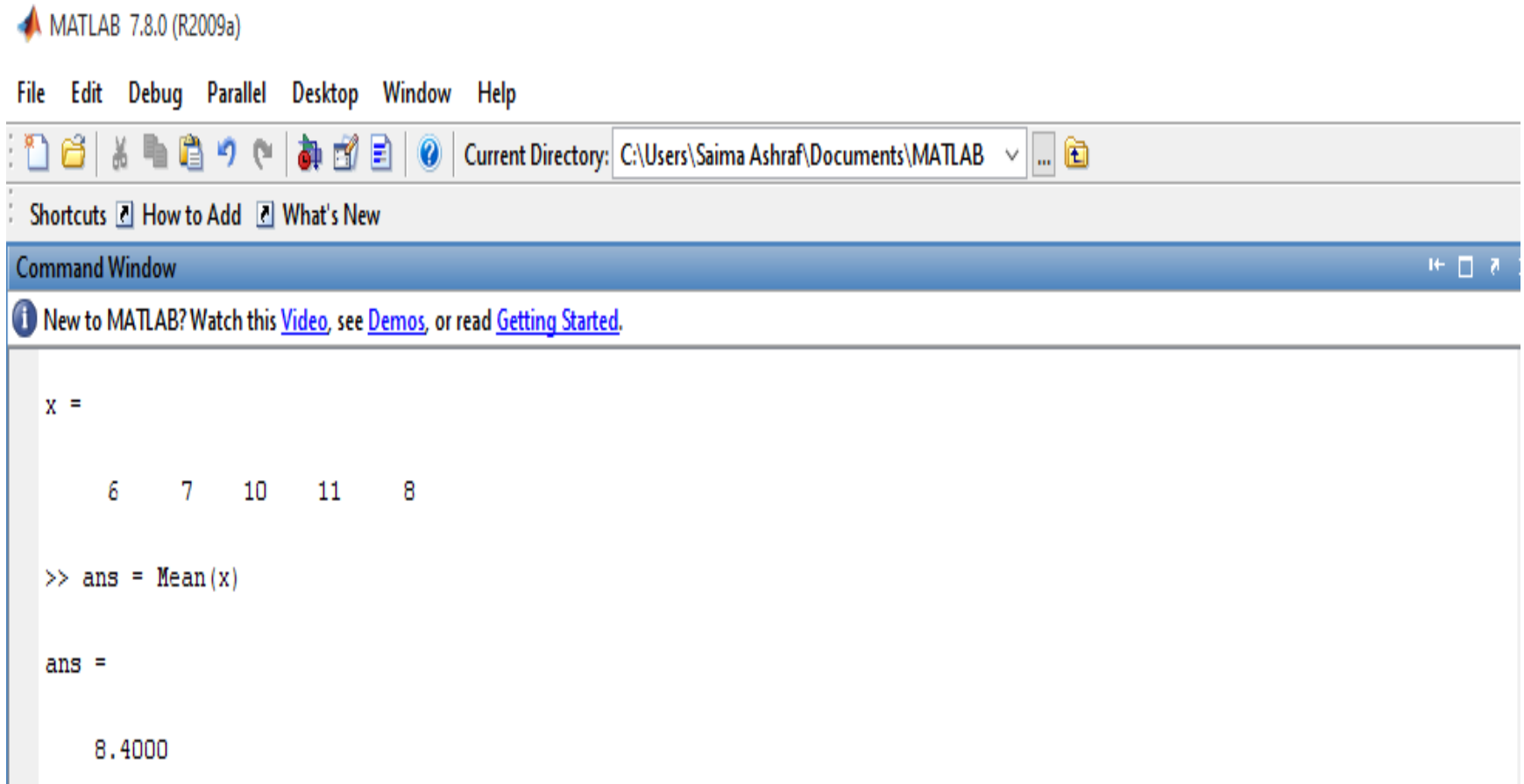
Measures of Central  
Tendency

# Data Entry in MATLAB

## Example 1:

- Find the arithmetic mean and median of the number 6, 7, 10, 11 and 8
- **Arithmetic Mean:**
- Command: Mean (x)

# Arithmetic Mean for Ungrouped Data



A screenshot of the MATLAB 7.8.0 (R2009a) Command Window. The window title is "MATLAB 7.8.0 (R2009a)". The menu bar includes "File", "Edit", "Debug", "Parallel", "Desktop", "Window", and "Help". The toolbar shows various icons for file operations and help. The "Current Directory" is set to "C:\Users\Saima Ashraf\Documents\MATLAB". Below the toolbar, there are links for "Shortcuts", "How to Add", and "What's New". The Command Window itself has a blue header bar with the text "Command Window" and standard window controls. Below the header, there is an information icon and a message: "New to MATLAB? Watch this [Video](#), see [Demos](#), or read [Getting Started](#)." The main area of the Command Window displays the following code and output:

```
x =  
    6    7   10   11    8  
  
>> ans = Mean(x)  
  
ans =  
  
    8.4000
```

# Arithmetic Mean

- **Mean each column:**

Command: Mean (x,

1)

```
>> x=[2 3 4;4 5 6;5 6 7]

x =

     2     3     4
     4     5     6
     5     6     7

>> Mean(x,1)

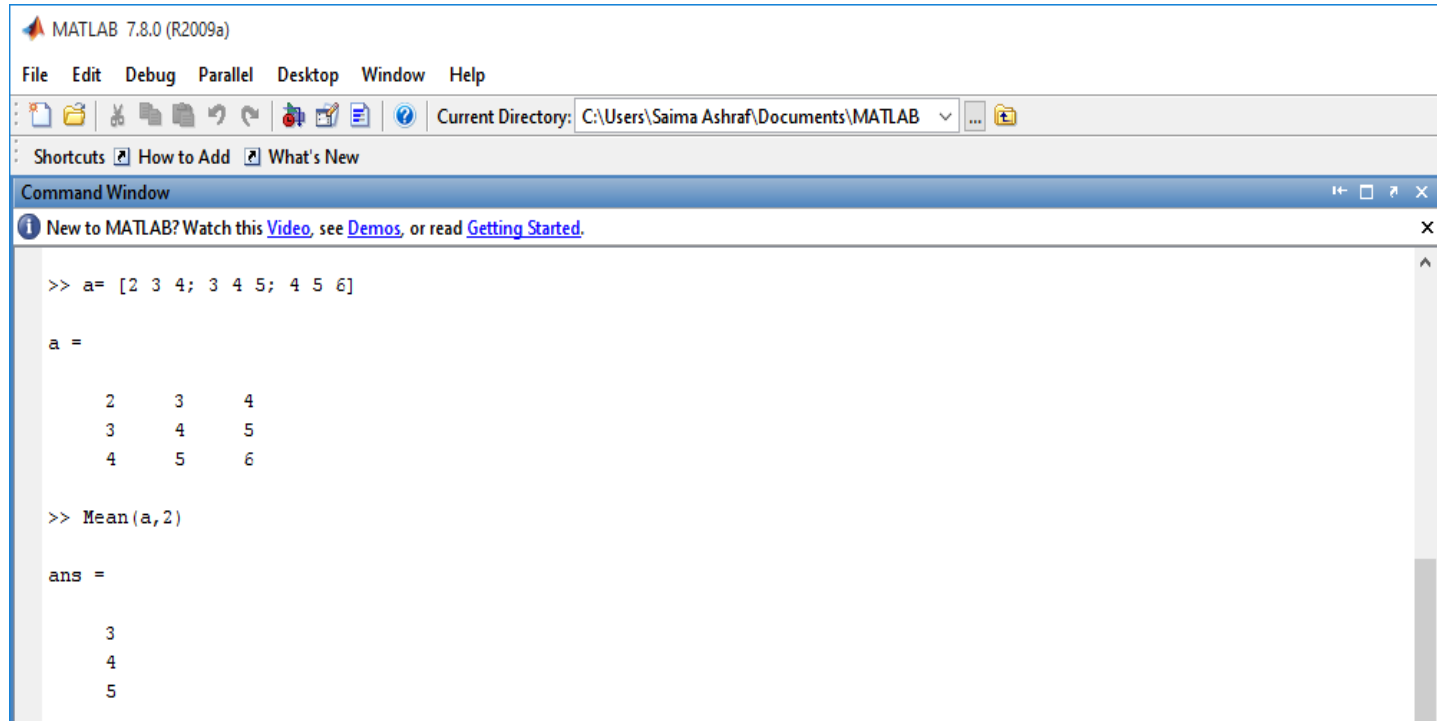
ans =

     3.6667     4.6667     5.6667
```

# Arithmetic Mean

- **Mean each row:**

Command: Mean (a, 2)



The screenshot shows the MATLAB 7.8.0 (R2009a) Command Window. The current directory is C:\Users\Saima Ashraf\Documents\MATLAB. The Command Window displays the following code and output:

```
>> a = [2 3 4; 3 4 5; 4 5 6]

a =

     2     3     4
     3     4     5
     4     5     6

>> Mean(a,2)

ans =

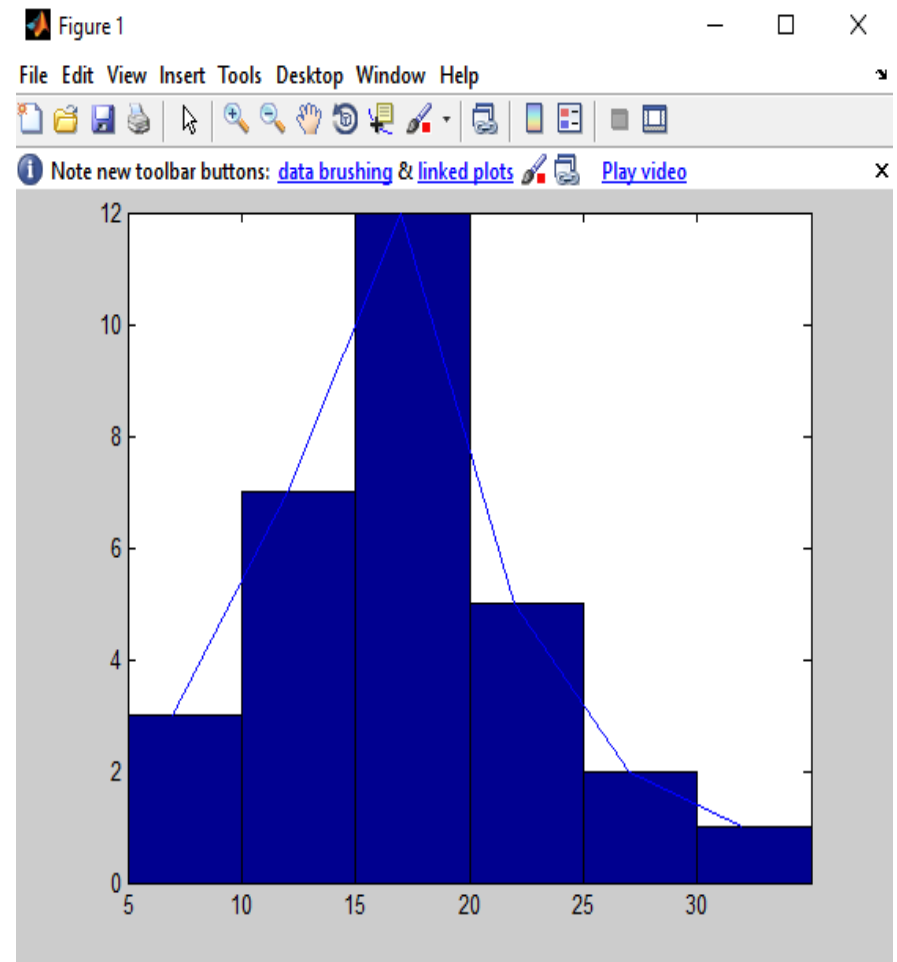
     3
     4
     5
```

# Exercise Question

- Find the arithmetic mean and median of the following numbers using MATLAB built-in function.
- 2, 4, 13, 12, 3, 4, 5 ,2 and 8

# Draw a histogram and frequency polygon on same graph

```
L =  
  
    5    10    15    20    25    30  
  
>> U=[9 14 19 24 29 34]  
  
U =  
  
    9    14    19    24    29    34  
  
>> M=(L+U)/2  
  
M =  
  
    7    12    17    22    27    32  
  
>> bar(L,F,'histc')  
>> hold on  
>> plot(M,F)
```



# Median

- **Median:**
- Command: Median (x)

```
x =  
    6    7   10   11    8  
  
>> s=sort(x)  
  
s =  
    6    7    8   10   11  
  
>> Median(x)  
  
ans =  
    8
```



# Median

**Example: 2** (even number of score)

Suppose we have the data below(10 scores)

65 ,55,89, 56, 35 ,14 ,56, 55, 87, 45

- we first need to rearrange that data into order of magnitude (smallest first)
- Only now we have to take the 5<sup>th</sup> and 6<sup>th</sup> score in our data set and average them to get a

Median of 55.5

# Median

```
>> x=[65 55 89 56 35 14 56 55 87 45]
```

```
x =
```

```
    65    55    89    56    35    14    56    55    87    45
```

```
>> s=sort(x)
```

```
s =
```

```
    14    35    45    55    55    56    56    65    87    89
```

```
>> Median(x)
```

```
ans =
```

```
    55.5000
```

# Mode

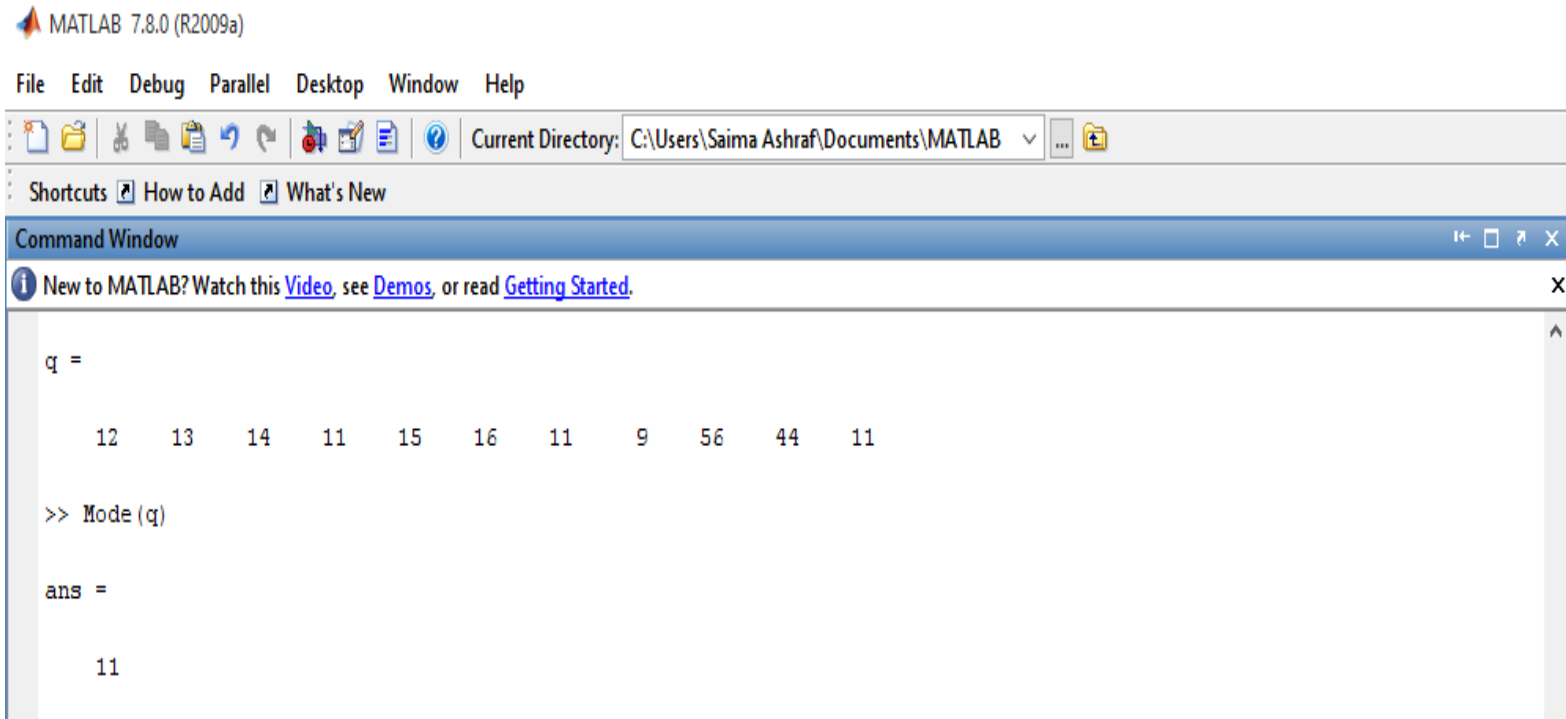
## Example 3:

- For the data given below, find Mode  
12, 13

14, 11, 15, 16, 11, 9, 56, 44, 11

# Mode

- Command: Mode (q)



A screenshot of the MATLAB 7.8.0 (R2009a) Command Window. The window title bar shows 'MATLAB 7.8.0 (R2009a)'. The menu bar includes 'File', 'Edit', 'Debug', 'Parallel', 'Desktop', 'Window', and 'Help'. The toolbar contains icons for file operations and a 'Current Directory' dropdown showing 'C:\Users\Saima Ashraf\Documents\MATLAB'. Below the toolbar, there are links for 'Shortcuts', 'How to Add', and 'What's New'. The Command Window itself has a blue header bar with the text 'Command Window' and standard window controls. Below the header, there is an information message: 'New to MATLAB? Watch this [Video](#), see [Demos](#), or read [Getting Started](#).' The main area of the Command Window shows the following code and output:

```
q =  
    12    13    14    11    15    16    11     9    56    44    11  
  
>> Mode(q)  
  
ans =  
  
    11
```

# Exercise Question

- Find the Mode of the following numbers using MATLAB built-in function.
- 2, 4, 13, 12,12,13, 4,12, 5 ,2  
and 8

# Weighted Mean

## Example 4:

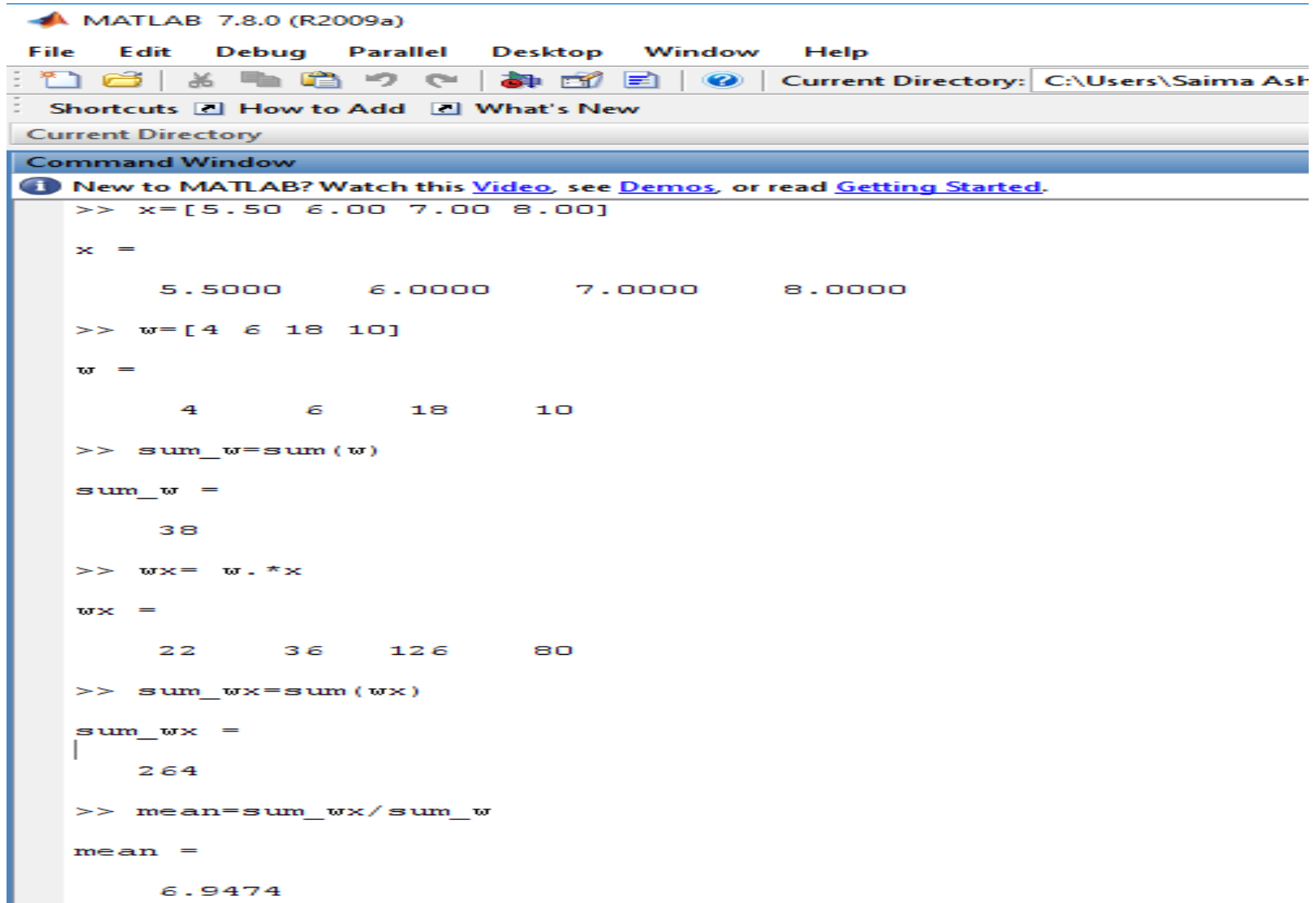
- Compute the weighted mean of the price of wheat for the following data assuming the quantities consumed as weight.

<b>Price</b>	5.50	6.00	7.00	8.00
<b>Qty.Consumed (kg)</b>	4	6	18	10

# Step's

1. `>> x=[5.50 6.00 7.00 8.00]`
2. `>> w=[4 6 18 10]`
3. `>> sum_w=sum(w)`
4. `>> wx= w.*x`
5. `>> sum_wx=sum(wx)`
6. `>> mean=sum_wx/sum_w`

# Weighted Mean



The image shows the MATLAB 7.8.0 (R2009a) Command Window. The interface includes a menu bar (File, Edit, Debug, Parallel, Desktop, Window, Help) and a toolbar. The Current Directory is set to C:\Users\Saima Ash. The Command Window displays the following code and output:

```
>> x=[5.50 6.00 7.00 8.00]

x =

    5.5000    6.0000    7.0000    8.0000

>> w=[4 6 18 10]

w =

     4     6    18    10

>> sum_w=sum(w)

sum_w =

    38

>> wx= w.*x

wx =

    22    36   126    80

>> sum_wx=sum(wx)

sum_wx =

    264

>> mean=sum_wx/sum_w

mean =

    6.9474
```



# Assignment Question:

**NOTE: Work in MATLAB**

## Question: 1

Find the Arithmetic mean of the numbers 3,

56 ,12,32,34,23,1,2,5,7,34,56,23,13,45  
,56,34,67,56,78.

# Assignment Question(J)

## Question: 3

A person walks 9 hours at a speed of 3 km.p.h,again walks 8 hours at a speed of 4 km.p.h.Find the average speed.

## Formula:

Average speed= Total speed/Total Time.

# Assignment Question(J):

## Question: 4

The following data shows the results of a survey which was conducted to find out the colour preference of people regarding the cars.

Orange Orange White Grey Black Orange  
White Orange White Grey Black Orange  
Orange Grey Orange Black Orange White  
Black Black

Find the Modal colour for the above qualitative data.